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Amendments to the Claims

Please amend the claims as follows:

1. (currently amended) A method of ~~depositing optical quality films~~making silica waveguides ~~by PECVD (Plasma Enhanced Chemical Vapour Deposition)~~, comprising:

depositing ~~an~~ optical films -by PECVD (Plasma Enhanced Chemical Vapour Deposition) in the presence of a silicon-containing gas, an oxidation gas, a carrier gas, and a doping gas, said optical films having refractive indices differing by an amount delta-n~~of gases~~; ~~and~~

setting a total pressure of said gases and flow rates of said silicon-containing gas, said oxidation gas, and said carrier gas at constant values to minimize absorption peaks in FTIR spectra; and

~~c~~adjusting the ~~ontrolling the~~ flow rate of ~~at least one of said gases to minimize unwanted absorption peaks in the deposited film~~said doping gas while maintaining said total pressure and said flow rates at constant values to achieve a target value for said delta-n.

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (currently amended) A method as claimed in claim 1, wherein said doping gas~~es include~~ is PH_3~~, and the flow rate of said PH_3 is varied to minimize unwanted absorption peaks in the deposited layer~~.

6. (currently amended) A method as claimed in claim 5, wherein said ~~other~~ silicon-containing gas is ~~es comprise~~ SiH_4, said oxidation gas is N_2O, and said carrier gas is N_2.

7. (cancelled)

8. (currently amended) A method as claimed in claim ~~2~~1, wherein said ~~at least one gas is~~doping ~~a~~ gas is selected from the group consisting of~~ diborane,~~; B_2H_6~~,~~; ~~Arsine~~ (AsH_3)~~,~~; ~~Titanium hydride,~~ TiH_4; ~~or germane,~~ GeH_4~~,~~; ~~Silicon Tetrafluoride,~~ SiF_4; and ~~of carbon tetrafluoride,~~ CF_4.

9. (cancelled)

10. (cancelled)

11. (currently amended) A method as claimed in claim ~~10~~6, wherein the SiH_4 gas flow is fixed at about 0.20 std litre/min; the N_2O gas flow is fixed at about 6.00 std litre/min; the N_2 gas flow is fixed at 3.15 std litre/min; and the PH_3 gas flow, is varied among the following values: 0.00 std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.

12. (currently amended) A method as claimed in claim 11, wherein the ~~the~~ total deposition pressure is fixed at about 2.60 Torr.

13. (original) A method as claimed in claim 1, further comprising subjecting the films to a post deposition thermal treatment.

14. (original) A method as claimed in claim 13, wherein said post thermal treatment takes place at a temperature between 400 and 1200°C.

15. (original) A method as claimed in claim 14, wherein said thermal treatment takes place at about 800°C.

16. (original) A method as claimed in claim 15, wherein said thermal treatment takes place in the presence of nitrogen.

17. (original) A method as claimed in claim 2, wherein said films are deposited at a temperature between between 100 and 650°C.

18. (original) A method as claimed in claim 17, wherein said films are deposited at a temperature of about 400°C.

19. (cancelled)

20. (currently amended) A method of ~~depositing~~ making silica waveguides~~optical quality films~~ ~~by PECVD (Plasma Enhanced Chemical Vapour Deposition)~~, comprising:

~~creating~~ defining a six-dimensional space wherein five dimensions thereof correspond to ~~five~~ first, second, third, fourth, and fifth respective independent variables, of which ~~a set of four~~ said first, second, third, and fourth independent variables relate respectively to the flow-rate ~~of respective~~of a raw material gas, an oxidation gas, a carrier gas, and a doping gases, and said a fifth independent variable relates to total pressure, and a sixth dimension relates to observed FTIR characteristics;

~~and~~

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depositing optical quality films having refractive indices differing by an amount delta-n by PECVD (Plasma Enhanced Chemical Vapour Deposition) ~~depositing an optical film~~ while maintaining ~~three of said set of four independent variables substantially~~ said first, second, third and fifth independent variables constant at values ~~as well as~~selected to optimize said observed FTIR characteristics; and

~~said fifth independent variable, and~~ varying ~~a~~ said fourth ~~of said set of four~~ independent variable~~s to obtain desired characteristics in said sixth dimension~~to obtain the desired delta-n without changing said observed FTIR characteristics.

21. (currently amended) A method as claimed in claim 20, wherein said optical films are ~~is~~ a silica films.

22. (cancelled)

23. (currently amended) A method as claimed in claim ~~22~~21, wherein said raw material gas is selected from the group consisting of: SiH_4~~,~~; ~~silicon tetra-chloride,~~ $SiCl_4$~~,~~; ~~silicon tetra-fluoride,~~ SiF_4~~,~~; ~~disilane,~~ Si_2H_6~~,~~; ~~dichloro-silane,~~ SiH_2Cl_2~~,~~; ~~chloro-fluoro-silane~~ $SiCl_2F_2$~~,~~; ~~difluoro-silane,~~ SiH_2F_2, ~~and any other silicon containing gases involving the use of hydrogen, H, chlorine, Cl, fluorine, F, bromine, Br, and iodine, I.~~

24. (currently amended) A method as claimed in claim 23, wherein said oxidation gas is selected from the group consisting of N_2O~~,~~; ~~oxygen,~~ O_2~~,~~; ~~nitric oxide,~~ NO_2~~,~~; ~~water, H_2O,~~ ;~~hydrogen peroxide,~~ H_2O_2~~,~~;~~carbon monoxide,~~ CO; ~~or carbon dioxide,~~ CO_2.

25. (currently amended) A method as claimed in claim 24, wherein said carrier gas is selected from the group consisting of N_2~~,~~; ~~helium,~~ He~~,~~; ~~neon,~~ Ne~~,~~; ~~argon,~~ Ar; and ~~krypton,~~ Kr.

26. (currently amended) A method as claimed in claim 25, wherein said doping gas is selected from the group consisting of PH_3~~,~~; ~~diborane,~~ B_2H_6~~,~~; ~~Arsine (AsH_3),~~ ~~Titanium hydride,~~ TiH_4; ~~or germane,~~ GeH_4~~,~~;~~Silicon Tetrafluoride,~~ SiF_4; and ~~carbon tetrafluoride,~~ CF_4.

27. (original) A method as claimed in claim 20, further comprising carrying out a post-deposition thermal treatment at a temperature between 400 and 1200°C.

28. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out in the presence of nitrogen.

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29. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out at a temperature of about 800°C.

30.(new) A method as claimed in claim 20. wherein the raw material gas flow is fixed at about 0.20 std litre/min; the oxidation gas flow is fixed at about 6.00 std litre/min: the nitrogen gas flow is fixed at about 3.15 std litre/min: and the dopant gas flow, is varied among the following values; 0.00 std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.